Listing of the Claims

Please amend claims 1, 12 and 16 as follows.

1. (currently amended) A method of forming a SIMS monitor device for determining a 2-dimensional doping profile of a semiconductor device structure comprising the steps of:

providing a plurality of regularly repeating semiconductor structures each including a doping profile to form a monitor device including at least one layer of the regularly repeating semiconductor structures;

planarizing the monitor device through a thickness of the regularly repeating semiconductor structures to reveal a target surface overlying the doping profile to form a monitor pattern;

sputtering the target surface over a sputtering area including the monitor pattern through a thickness thereof while simultaneously detecting and counting over a time interval at least one type of species ejected from the target surface according to a secondary ion mass spectroscopy procedure (SIMS); and,

determining a 2-dimensional doping concentration ~~profile~~ comprising the doping profile for an individual semiconductor structure comprising the plurality.

2. (previously presented) The method of claim 1, wherein the monitor pattern further comprises a regularly repeating pattern in at least two planar dimensions of the doping profile.

3. (previously presented) The method of claim 1, wherein the planarizing step comprises a chemical mechanical polishing (CMP) step.

4. (original) The method of claim 3, wherein the target surface comprises a polysilicon substrate including the doping profile.

5. (original) The method according to claim 1, wherein the monitor device further comprises multiple layers of the regularly repeating semiconductor structures.

6. (previously presented) The method of claim 5, wherein the steps of planarizing and sputtering are carried out for at least one layer of the multiple layers.

7. cancelled

8. (original) The method of claim 1, wherein the target surface has an area sufficient to include the sputtering area.

9. (original) The method of claim 1, wherein the regularly repeating semiconductor structures include CMOS structures and memory structures.

10. (original) The method of claim 1, wherein the monitor pattern forms regularly repeating rows.

11. (original) The method of claim 1, wherein the monitor pattern forms regularly repeating rows of regularly repeating rectangles.

12. (currently amended) A monitor device for analysis of a 2-dimensional doping profile of an individual semiconductor device structure according to a SIMS procedure comprising:

a planarized surface intersecting a plurality of regularly repeating semiconductor structures each comprising a doping profile to form a target surface said regularly repeating semiconductor structures included in at least one layer of the monitor device said monitor device being mountable in a secondary ion mass spectrometer for sputtering the target surface through a thickness to determine a 2-dimensional doping profile of an individual semiconductor structure.

13. (previously presented) The monitor device of claim 12, wherein the target surface further comprises a regularly repeating pattern in two planar dimensions of the doping profile formed by the planarized surface intersecting a plurality of regularly repeating semiconductor structures.

14. (original) The monitor device of claim 12, wherein the target surface is disposed at about the start of the doping profile extending through a thickness perpendicular to the target surface.

15. (original) The monitor device of claim 12, wherein the monitor device further comprises multiple layers of the regularly repeating semiconductor structures.

16. (currently amended) The monitor device of claim 12, wherein the target surface has an area sufficient to include a sputtering area.

17. (previously presented) The monitor device of claim 12, wherein the target surface forms a rectangular shape with a length of about 50 microns to about 300 microns on a side.

18. (original) The method of claim 12, wherein the regularly repeating semiconductor structures include CMOS structures and memory structures.

19. (original) The monitor device of claim 13, wherein the regularly repeating pattern approximates regularly repeating rows.

20. (original) The monitor device of claim 13, wherein the regularly repeating pattern approximates regularly repeating rows of rectangular shapes.